

Specification

1X9 Form Factor

Duplex ST Receptacle – DSC

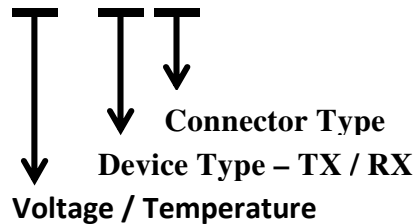
Optical Transceivers

STM-1 / OC-3 / 100BASE
155.52Mbit/s



Ordering Information

TBS-D2AC6-DBT



| Model Name | Voltage | Category | Device type | Connector Type | Interface | Temperature | Distance |
|---------------|---------|----------|------------------|----------------|--------------|--------------|----------|
| TBS-D2AC6-DBT | 3.3V | W/O DDMI | 1550 FP / 1310nm | ST | DC-DC / PECL | -40°C ~+85°C | 2km |

Features

- ST Bi-Directional Transceiver
- Industry Standard 1x9 Footprint
- Single 3.3 Power Supply
- **DC-DC / PECL** Signal Detection Output
- Wave Solderable and Aqueous Washable
- Uncooled Laser Diode with MQW structure
- Complies with Telcordia(Bellcore) GR-468-CORE
- ROHS Compliant

Applications

- WDM 155M Links
- SONET/SDH Equipment Interconnect

Absolute Maximum Ratings

| Absolute Maximum Ratings | | | | | |
|--------------------------|--------|------|------|-------|------|
| Parameter | Symbol | Min. | Max. | Units | Note |
| Storage Temperature | Ts | -40 | 85 | °C | |
| Power Supply Voltage | Vcc | 0 | 4.5 | V | |
| | | 0 | 6 | V | |
| Soldering Temperature | | | 260 | °C | |
| Input Voltage | Vin | GND | Vcc | V | |
| Output Current | Iout | 0 | 30 | mA | |

Operating Conditions

| Recommended Operating Conditions | | | | | | |
|----------------------------------|--------|------|------|------|-------|------|
| Parameter | Symbol | Min. | Typ. | Max. | Units | Note |
| Power Supply Voltage | Vcc | 3.15 | 3.3 | 3.45 | V | |
| Operating Temperature | Top | -40 | | 85 | °C | |
| Data Rate | | | 155 | | Mbps | |
| Power Supply Current | Icc | | 150 | 250 | mA | |

Transmitter Specifications

($V_{CC} = 3.1V \sim 3.5V$; $T_c = -40^{\circ}C \sim 85^{\circ}C$)

| Transmitter Specifications | | | | | | |
|----------------------------|-----------------------------|------|------|------|-------|-------|
| Parameter | Symbol | Min. | Typ. | Max. | Units | Notes |
| Optical | | | | | | |
| Optical Transmit Power | Po | -14 | | -4 | dBm | |
| Optical Center Wavelength | λ_C | 1500 | 1550 | 1600 | nm | |
| Output Spectrum Width | $\Delta\lambda$ | | 2 | 4 | nm | |
| Extinction Ratio | ER | 10 | - | - | dB | |
| Output Eye | Compliance with ITU-T G.957 | | | | | |
| Optical Rise Time | tr | | 1 | 2 | ns | |
| Optical Fall Time | tf | | 1 | 2 | ns | |
| Relative Intensity Noise | RIN | | | -116 | dB/Hz | |
| Electrical | | | | | | |
| Data Input Current – Low | | -350 | | | uA | |
| Data Input Current – High | | | | 350 | uA | |
| Differential Input Voltage | VIH -VIL | 300 | | 2400 | mV | |

Receiver Specifications

($V_{CC} = 3.1V \sim 3.5V$; $T_c = -40^{\circ}C \sim 85^{\circ}C$)

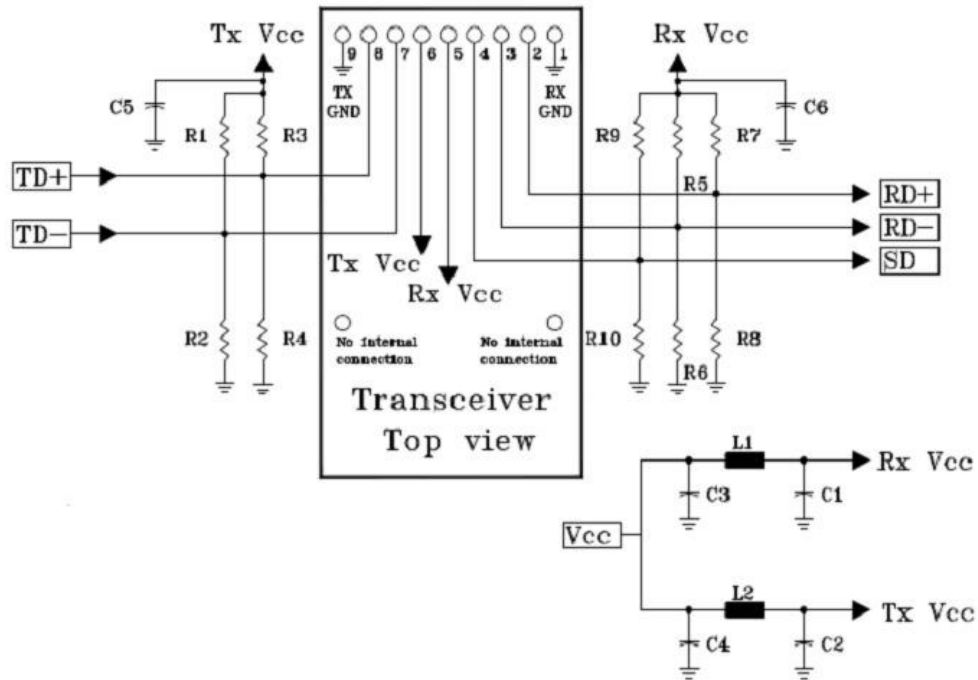
| Receiver Specifications | | | | | | |
|------------------------------------|------------------|-------|------|-------|-------|-------|
| Parameter | Symbol | Min. | Typ. | Max. | Units | Notes |
| Optical | | | | | | |
| Sensitivity | Sen | | | -30 | dBm | |
| Maximum Input Power (Saturation) | P _{MAX} | -3 | | | dBm | |
| Signal Detect -- Asserted | P _a | | | -30 | dBm | |
| Signal Detect -- Deasserted | P _d | -45 | | | dBm | |
| Signal Detect -- Hysteresis | Phys | 1 | | 5 | dB | |
| Wavelength of Operation | λ | 1260 | 1310 | 1360 | nm | |
| Electrical | | | | | | |
| Data Output Voltage – Low | VOL –VCC | -1830 | | -1555 | mV | |
| Data Output Voltage – High | VOH –VCC | -1085 | | -880 | mV | |
| Signal Detect Output Voltage- Low | VSDL –VCC | -2.0 | - | -1.58 | V | |
| Signal Detect Output Voltage- High | VSDH –VCC | -1.1 | - | -0.74 | V | |

Pin Definition and Descriptions

| | |
|-----------------------------|----------|
| 1 Receiver Signal Ground | |
| 2 Receiver Data Out | O N .C. |
| 3 Receiver Data Out Bar | |
| 4 Signal Detect | |
| 5 Receiver Power Supply | Top View |
| 6 Transmitter Power Supply | |
| 7 Transmitter Data In Bar | |
| 8 Transmitter Data In | O N.C. |
| 9 Transmitter Signal Ground | |

| Pin | Name | Description |
|-----|------------------|---------------------------|
| 1 | RX GND | Receiver Signal Ground |
| 2 | RD+ | Receiver Data Out |
| 3 | RD- | Receiver Data Out Bar |
| 4 | SD | Signal Detect |
| 5 | V _{CCR} | Receiver Power Supply |
| 6 | V _{CCT} | Transmitter Power Supply |
| 7 | TD- | Transmitter Data In Bar |
| 8 | TD+ | Transmitter Data In |
| 9 | TX GND | Transmitter Signal Ground |

Recommended Circuit Diagram



Notes (3.3V)

$R1 = R3 = R5 = R7 = R9 = 130\Omega$

$R2 = R4 = R6 = R8 = R10 = 82\Omega$

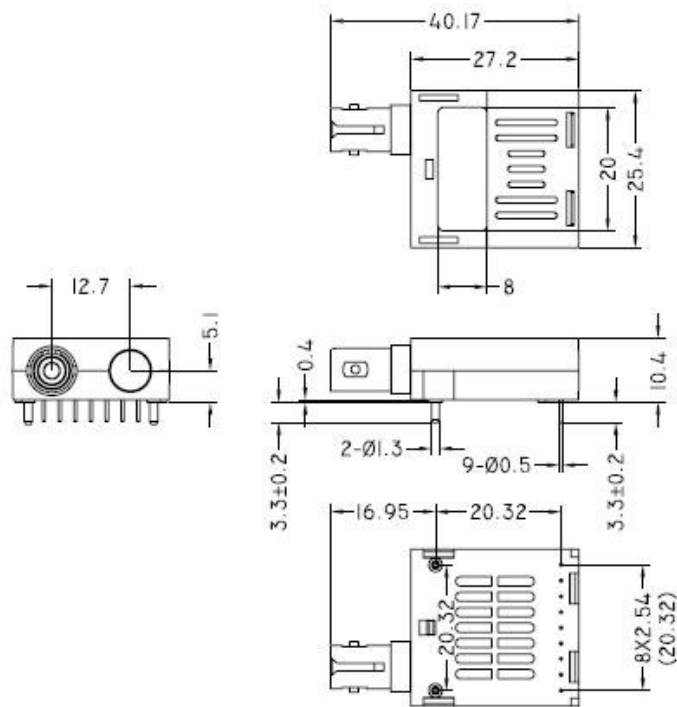
$C1 = C2 = C3 = C5 = C6 = 0.1\mu F$

$C4 = 10\mu F \quad L1 = L2 = 1\mu H$

Mechanical Outlines

(Unit: mm)

ST Side Type



Revision History

| Date | Version | Description |
|------------|---------|--|
| 08/14/2018 | 1.0 | Initial release |
| 12/18/2018 | 1.1 | Correct Interface to DC-DC/PECL from LVPECL/PECL |